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STABLE DIAZO SALT PREPARATION AND PROCESS OF PREPARING IT

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No drawing

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It has been heretofore suggested to improve the solubility and stability of double salts of aromatic diazo compounds and salts of magnesium, cadmium or zinc by adding thereto metal salts of aromatic sulphonic acids. The resulting combinations, however, have been found to give duller final colours especially in printing.

We have now found that this tendency to give dull colours particularly in printing can be largely overcome by adding to such double salts of aromatic diazo compounds and salts of magnesium, cadmium and zinc, free aromatic sulphonic acids. This is surprising since it would have been expected by those skilled in the art that compositions containing free aryl sulphonic acids would be more reactive (less stable) than compositions containing metal salts of such acids and there is nothing in the art to suggest that with double salts containing salts of magnesium, cadmium or zinc, free aryl sulphonic acids might be usable at all, quite apart from the advantages which we have found from such use.

The resulting compositions exhibit a very desirable increased stability. They also show no tendency to give duller final colours. These characteristics represent an important advance in the art.

According to our invention, the free aryl sulphonic acids may be admixed with the stated double salts in the dry or in the wet state. They may be advantageously admixed with the wet press cake of the diazo double salts or during the early stages of the dyeing or printing operations.

In general any free aryl sulphonic acid may be employed in carrying out our invention. Of course, as a practical matter the sulphonic acid should be incapable of coupling with diazo compounds since otherwise formation of a dye from the diazo compound and the acid might ultimately take place. Those skilled in the azo dyestuff art are well informed as to what free aryl sulphonic acids will and will not couple with diazo compounds. We prefer to employ the free poly-sulphonic acids of naphthalene since these acids give the best results, particularly as respects stability which is an important factor. However, sulphonic acids of the benzene series are also useful as are other free aryl

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sulphonic acids.

The following examples serve to illustrate the invention but they are not intended to limit it thereto. The parts are by weight.

Example 1

One hundred parts of the dried homogenous mixture of the zinc chloride double salt of diazo 4 nitro 2 anisidine and aluminum sulphate containing 22 per cent base are mixed with 10 parts of naphthalene-1,8-disulphonic acid. A diazo salt preparation is thereby obtained which in dyeing and printing operations is far more stable than the diazo zinc chloride double salt without such addition.

Example 2

To 100 gm. of a homogenous dry mixture made up of aluminum sulphate, sodium sulphate and the zinc-tin chloride double salt of diazo 3 nitro 4 anisidine, containing 22 per cent base, was added 10 gm. of para toluene sulphonic acid. The resulting diazo salt gives a printing paste with vastly improved stability.

Example 3

The moist press cake of the zinc chloride double salt of tetrazo dianisidine is mixed with about 5 per cent of naphthalene 1,3,6 trisulphonic acid and $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ and dried at 40° C. yielding a powder containing 20 per cent base.

The product so formed gives a printing paste stable after several days standing, whereas without such addition the diazo compound is entirely destroyed.

Example 4

4-5 gm. of the dry standardized mixture of the zinc chloride double salt of diazo 2,5 dichloraniline containing 20 per cent of the base are dissolved in 25 cc. of water which contains 0.5 gm. of naphthalene 1,6 disulpho acid. The solution is made up to 100 gm. printing paste with one of the usual thickeners.

This printing paste is far superior in stability to the same printing paste without the naphthalene

disulphonic acid. If desired metal salts of aryl sulphonic acids may also be added to the compositions described in the above examples but such addition is not necessary in order to obtain the advantages of the present invention.

Other aryl sulphonic acids such as the benzol or diphenyl sulphonic acids, naphthalene 1-5, 1-6, and 2-7 disulphonic acid, 4-hydroxy-3-chlor-benzol sulphonic acid, o-chlor-o-cresol-p-sulphonic acid, when mixed with diazo salt compounds also have the effect of stabilizing the diazo salt in dyeing and printing operations.

We claim:

1. A composition of matter comprising a double salt of an aromatic diazo compound and a salt of a metal selected from the group consisting of magnesium, cadmium and zinc and a free aryl sulphonic acid.
2. A composition of matter comprising a double

salt of an aromatic diazo compound and a salt of a metal selected from the group consisting of magnesium, cadmium and zinc and a free naphthalene sulphonic acid.

3. A composition of matter comprising a double salt of an aromatic diazo compound and a salt of a metal selected from the group consisting of magnesium, cadmium and zinc and a free naphthalene polysulphonic acid.

4. A composition of matter comprising a double salt of an aromatic diazo compound and a salt of a metal selected from the group consisting of magnesium, cadmium and zinc and a free benzene sulphonic acid.

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